

## **DIRECTIONAL WIRELESS COMMUNICATION SYSTEMS**

### **ABSTRACT OF THE DISCLOSURE**

A wireless communication system based on a directional speaker is disclosed. The system can include an interface unit and a base unit. The audio signals from the speaker can be generated by transforming ultrasonic signals in air. This allows the production of directional audio signals even when the aperture of the speaker has dimensions in the order of a few centimeters. The audio signals from the speaker can be heard hands-free. Further, privacy protection is enhanced. In one embodiment, the interface unit can be attached or integrated to a piece of clothing at the shoulder of the user, with the audio signals from the speaker directed towards one of the user's ears. The wireless communication system can be applied to a number of different areas, including a communication device, such as a cell phone; a hearing aid; an entertainment system; and a computation system, such as a personal digital assistant or a computer. The wireless communication system can be personalized to the hearing characteristics of the user, or to the ambient noise level of the environment.